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MUNICIPAL BUILDINGS,
LIVERPOOL, 18th February, 1904.

CITY OF LIVERPOOL. (4)

REPORT

OF THE

MEDICAL OFFICER OF HEALTH

UPON THE

WORK OF THE DEPOTS

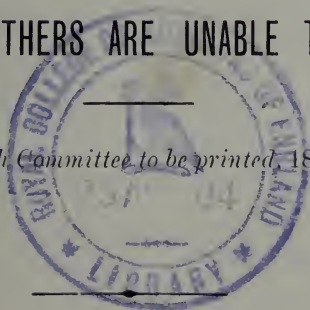
FOR THE

PREPARATION OF HUMANISED STERILIZED MILK

FOR THE USE OF

INFANTS WHOSE MOTHERS ARE UNABLE TO SUCKLE THEM.

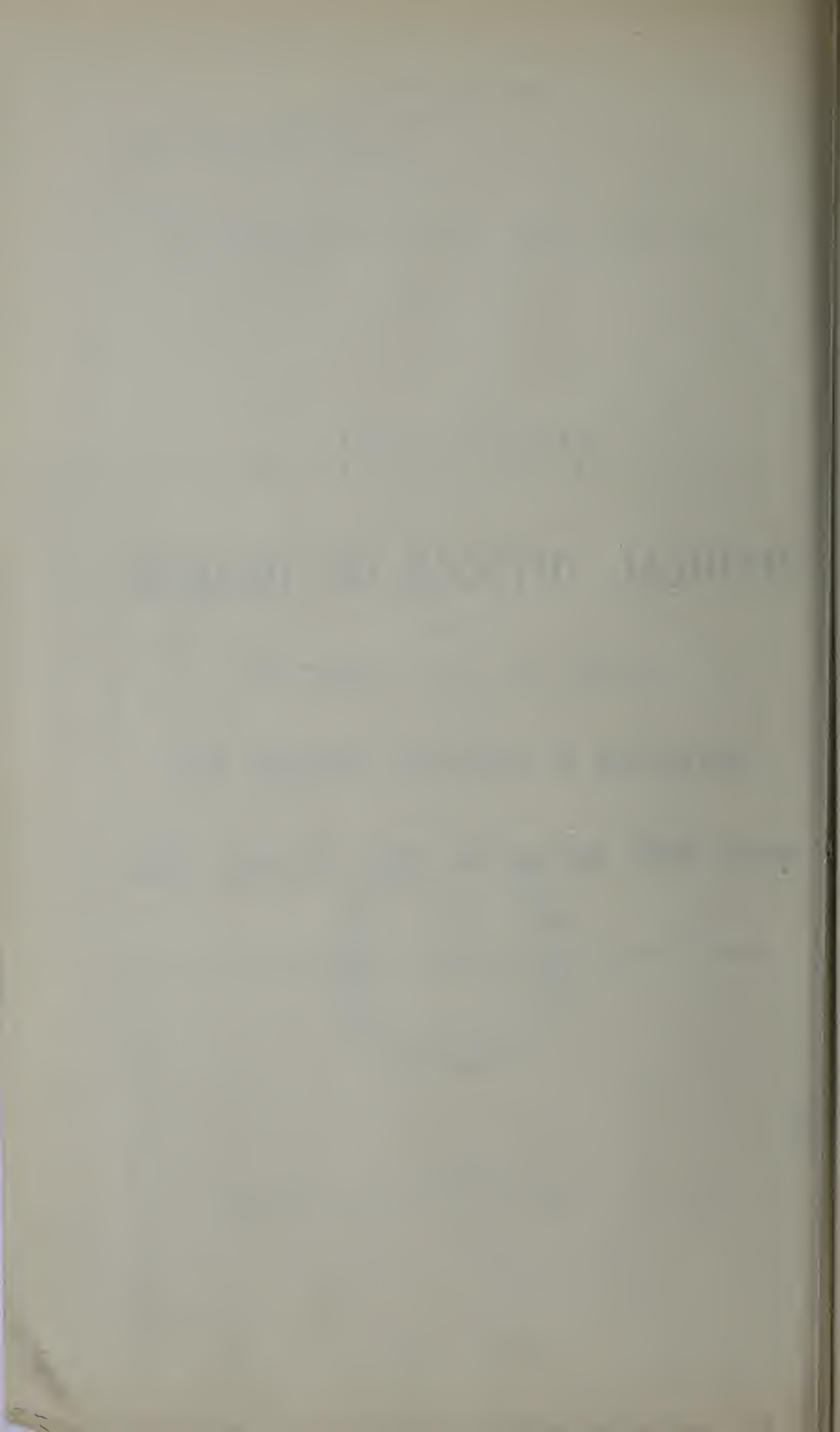
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PUBLIC HEALTH DEPARTMENT,

8th February, 1904.

REPORT

OF THE

MEDICAL OFFICER OF HEALTH.

Among the most difficult and most intricate of the problems which concern Sanitary Authorities are the means which must be taken to lessen the excessive losses of infant life.

Liverpool is no exception to the rule, and the general question of infant mortality has for a long period engaged the attention of the Health Committee, and reports as to many of the measures adopted and the results of those measures are already in the Committee's hands.

During the year 1903, a year characterised by having the lowest death-rate ever recorded in Liverpool, the rate of mortality amongst infants (which was also the lowest ever recorded) indicated that out of every 1,000 born 159 deaths occurred. The relatively greater loss of life below 12 months of age, as contrasted with the loss of life amongst those living above twelve months of age, is forcibly indicated in the table.

DEATH RATE PER 1000.

	Below One Year of Age.	Above One Year of Age.
Average of the last 3 Years.	178	16·7
During 1903	159	15·0

The most frequent among the causes which contribute to this high infant mortality, are shown by medical certificate to be "atrophy," "diarrhœa," "diarrhœa and convulsions," and similar causes, all pointing to the fact that from some reason or another nutrition is interfered with, and that the infant is unable to live upon the food given it.

The object of the present Report is to review the results of the special methods adopted by the Health Committee to meet this difficulty, always remembering that the natural guardian of the infant is the mother, and that it is only with extreme caution that the efforts of the Municipality can be specially directed to the preservation of infant life.

For various reasons it is necessary to make, however briefly, a few general observations upon the subject, and what has been previously done to deal with it. The loss of life from diarrhœa and kindred ailments is greatest in the summer and autumn months, and it was found as the result of careful personal observations, carried out by the Medical Officer of Health in conjunction with other members of the Liverpool Medical Institution, and extending over several years, inquiries which involved the circumstances of upwards of one thousand deaths of infants, that amongst infants below three months of age, either wholly or partially fed during this season on artificial foods, the deaths are fifteen times as great as they are amongst an equal number of infants fed upon breast milk, in other words, out of every 1,000 infants under three months of age, naturally fed upon breast milk alone, 20 died of autumnal choleraic disease; but of the same number of infants at the same age, artificially fed, then instead of 20 dying, as many as 300 died from this cause.

Similarly between 3 and 6 months, and 6 and 9 months of age, there was an immensely larger proportion of deaths amongst the artificially fed than amongst the breast fed, although this proportion diminished as the age increased. Details of these facts were laid before the Medical Institution some years ago. Then, as now, one of the most discouraging features was found to be the lamentable want of maternal care, or of intelligence, or of capability to follow out instructions when they were given by the medical adviser,

The food given to the artificially-fed was almost invariably found to be unsuitable, stale or even putrescent, and given from a dirty and foul-smelling, long-tubed feeding bottle.

As it is obvious that the staple food of artificially-fed infants must be cows' milk modified in some form or another, it may be well now to recapitulate the steps taken in the City to ensure that the milk supply shall be pure, at least until it is delivered at the house. Nearly 30,000 gallons of milk are consumed in Liverpool every day, but as the Liverpool cows only provide half this quantity it is necessary to deal also with the sources of supply of the other half which comes from country districts. The following is an outline of the steps taken :—

With regard to cows kept within the City, closest attention has been paid, for the past ten or twelve years to the condition of the cowsheds and the health of the animals.

In 1897, with the sanction of the Local Government Board, a fresh series of regulations was made, providing for the routine inspection of the cattle, and, what is of equal importance, providing for the proper lighting, ventilation, cleansing, drainage and water supply for the cowsheds within the City, and for securing cleanliness of stores, shops and vessels, and for precautions against infection or contamination. This close supervision has resulted in bringing the Liverpool cowsheds up to their present standard.

With regard to milk imported from other districts, a Local Act was obtained in 1900 which enabled the Health Authorities to prohibit the importation into the City of milk from any outside dairy or cowshed, if, in the opinion of the Medical Officer of Health, such milk were contaminated in a manner likely to cause tuberculosis—a provision which, whilst guarding specifically against tuberculosis, should incidentally result in ensuring healthy cows living under healthy conditions. The investigations undertaken at the instance of the Liverpool Corporation by Professors Boyce, Delepine, Hamilton and Woodhead, contributed to the passing of this salutary act, and although the application of it is tedious, difficult and cumbersome, it has done a great deal of good, not only for Liverpool, but for the surrounding country also.

The staff employed in dealing with the milk-supply comprises five inspectors conversant with the Diseases of Animals, and also a Veterinary Surgeon, to whom reference can be made; three inspectors who inspect and report upon the structural and sanitary condition of the cow-sheds, and three inspectors whose business it is to procure samples under the Food and Drugs Act for chemical and bacteriological analysis; about 1,000 samples of milk are taken for chemical analysis annually, and about 600 for bacteriological examination; they are taken from dairies, shops, street carts in the act of delivering, and also from railway stations. It must be added that every cowkeeper receives careful instructions, and a printed copy of all requirements and regulations affecting his trade. The Cowkeeper's Association, realising the advantages to their own trade of attention to these matters, co-operate with the Health Authorities.

Nothing is omitted which can lessen the dangers of contamination to the milk in its many vicissitudes on its way from the cow to the consumer. But it must be remembered that milk, as nature intended it to be given, is never once exposed to the air, that it passes directly at the time of the manufacture in the gland to the stomach: its composition, temperature and mixture adapt it to the needs of the offspring; it has neither abstractions, adulterations, preservatives nor uncleanness; it is, moreover, bacteriologically clean and pure. Nothing the Municipality can do can equal this.

It must be added that there has been no relaxation in the efforts to improve the methods of domestic sanitation. It is not necessary to enter into their details, although it may be mentioned that one of the functions allotted to the staff of female inspectors was to supplement the work of medical and other charitable institutions in giving instructions to mothers upon the care and management of infants, whilst a wide circulation was given by placards in the poor districts, and by cards of instructions, to information supplementing that given in the case of infants by the medical staff of the Children's Infirmary. As already stated all of these measures failed to prevent the domestic contamination of milk after delivery; they made little or no impression upon parents who either failed to realise the necessity of giving pure food, or if they did realise it, they were unable to act upon it.

In France—where the subject of infant life is one of such supreme importance—certain quantities of food are given, at the cost of some Municipalities, to mothers for their own nourishment, upon the condition that they will suckle their offspring, whilst steps were taken to find some substitute for mother's milk, for those infants whose mothers were unable to suckle them.

The problem of finding a complete substitute for the milk of a healthy mother has not been solved, and probably never will be solved. As the infant grows there may no doubt be variation in the quality of mother's milk which specially adapt it to the infant's need, niceties in nature which cannot be approached artificially.

The use of artificial food is unavoidable under the existing social conditions; the nearest approach to the natural food is derived from cows' milk, which can be so altered as to closely imitate human milk in its composition, and it can also be made to resemble it in another important particular, viz., it can be sterilized, and given whilst so sterilized.

It is the polluted cows' milk and the unsuitable artificial foods which cause the mischief, and as it is impossible by Municipal administration to reach and deal with all the sources of pollution, the justification for the present undertaking arises. The Municipality has spared no efforts to ensure a pure milk-supply.

It must not be lost sight of that in preparing infants' food in the homes of the poor, the contamination of milk is not the only source of mischief, even the sugar with which the milk is sweetened may be, and has been seen to be, taken from a sugar basin black with flies which would be likely to leave filthy contamination of any kind.

In this country the project of humanising the milk, that is to say, making it by the additions of milk-sugar, water and cream, as nearly as possible of the same chemical composition as human milk and sterilizing it, and adopting such methods as will enable the infants to receive this milk pure and without contamination, was first carried into effect on a small scale at St. Helens. In Liverpool

the project received warm and continuous support from Councillor Shehnerdine, who consented to act as Chairman of the Sub-Committee having control of the introduction of the system into the City.

This Committee had many difficulties to encounter, which happily were overcome, and need not be further alluded to now.

It cannot be too strongly emphasised that the milk is intended solely for the use of those infants whose mothers are unable to suckle them, or who can only partially suckle them. This fact is stamped upon every card of instructions and is placed into prominence at every opportunity. There must be no misunderstanding upon this point.

The first Liverpool effort was made at Netherfield Road, in the centre of a very populous district, where during the hot weather the deaths from diarrhoea were always very numerous. When ordering the plant for this dépôt, the best was done to find some firm with experience in this class of work, but as no such firm existed a large part of the work was experimental, and had subsequently to be altered. Nevertheless, valuable service has been done by it.

Some two months after, the Cazneau Street Dépôt was opened. This is about three-quarters of a mile from Netherfield Road, and is used merely as a distributing dépôt.

The number of people anxious to obtain the milk had now increased so much that the Committee opened another dépôt in the South end, in Earle Road, and also a distributing dépôt in Park Road. Many of the difficulties encountered in the former attempt were avoided, and the work at Earle Road is carried out conveniently and expeditiously.

The sale and distribution of the milk from dairies was allowed partly on grounds of economy, and with the hope of interesting the trade in the undertaking.

The advantage is that it saves the expense of opening shops and dépôts in all parts of the town: but the disadvantages are that the same close supervision cannot be kept over the customers receiving

the milk from the dairies as is kept over those supplied from our own depôts. In the case of the dairies there is also a likelihood that the bottles are tampered with, or kept too long, and as a matter of fact the only complaints which have arisen have been in connection with milk supplied from the dairies.

The milk is supplied by contract from both town and country shippens, and samples of it are taken on delivery from time to time for chemical and bacteriological analysis. When it arrives at the depôt, as a routine practice, a sample is taken for the purpose of estimating the amount of fat by Gerber's test: a sample is also examined in the cream-tube.

As to details, a mixture is prepared consisting of cows' milk, water, cream, salt, and sugar, in such quantities as to make the liquid practically the same as human milk; a sufficient amount for one feed for an infant of stated age is put into each bottle, and the bottle and contents are then sterilized.

The method of use is carefully explained verbally to the person having charge of the infant, and from time to time visits are paid to see that the milk is being used intelligently and in a proper manner. Owing to a common prejudice amongst the more ignorant classes, it is difficult to induce the mothers to bring the infant to the Depôt from time to time to be weighed.

It is not necessary to recapitulate the difficulties with which the Committee had to contend in bringing the milk supply to its present state of suitability. The successive steps have already been reported upon, and a description, together with photographs of the premises and sterilizing apparatus, have been given in the Annual Report of the Medical Officer for 1901. What it is desired now to show is how far the experiment has succeeded, how far the Corporation has been successful in the rôle of a foster mother.

The recent reduction in the rate of infant mortality in the City depends upon many causes. It is not for one moment claimed that it is altogether brought about by the Sterilized Milk. Some of the

improvement must clearly be assigned to other causes: on the other hand, there are facts now to be considered which will enable an opinion to be formed upon the part played by the milk.

From the date of the initiation of this scheme, viz., early in 1901, until 31st December, 1903, 6,295 infants have been fed upon this milk, supplied either at the dépôts or through dairies, the average age at the commencement of the feeding being $3\frac{1}{2}$ months, very few (367) were from one cause or another admitted after twelve months of age. In the great majority of instances the infants thrived, increasing in weight and remaining perfectly healthy.

It was possible to keep a much closer supervision over cases supplied from the dépôts than over those supplied by the dairies. Of the former, viz., 4,453 in number, there were 350 cases in which the infant died, but of these 49 had been fed on the milk for less than one week, and 18 had been irregularly fed on it; 228 were ill, some of them hopelessly ill when the milk was first supplied. Each death formed the subject of a careful inquiry, and it was found that out of the total number of infants who died only 55 were fairly healthy at the time of admission, and had been properly fed since. In these 55 cases the registered causes of death were as follows:—

Convulsions	5
Diarrhœa	6
Bronchitis	4
Pneumonia	2
Wasting	4
Teething	2
Inflammation of Stomach	1
Whooping Cough.....	1
Blood Poisoning	1
Effect of operation on throat.....	1
Disease of Leg	1
Croup	1
Inflammation of Lungs	1
Various other causes	25
	<hr/>
	55

Of those deaths attributed to diarrhœa or convulsions, in several cases the milk had been discontinued prior to the commencement of the fatal illness. Incidental circumstances in connection with one or two of the others may be quoted: In one instance the infant and another were the only survivors out of a family of ten: in another, it was the sole survivor of a family of six: in another instance, in which death took place at one month of age, there had been within the preceding fortnight deaths of two other elder children in the same family; several, delicate from birth, were tried with the milk as a last resort.

In the appendix will be seen the form of instructions as to the line of inquiry in these cases which is given to the female inspectors.

A study of the case-books, in which the particulars of each case are entered, and in which the progress of the child, so far as can be ascertained, is recorded, reveals many interesting facts. The first thing that strikes one is the very large number of children who are described as suffering from some form of sickness on admission; in fact, over 50 per cent. of those entered are stated by the mothers to be ill. A history that is frequently given is that almost everything in the way of infant's food has been tried without any satisfactory result, and they have come to the depôt as a last resource. A large number of these infants are recommended to try the milk by the medical attendants both in hospital practice and private practice, and they report excellent results in cases where it is used. The Committee are especially indebted to the members of the staff of the Children's Infirmary for their hearty co-operation and many valuable suggestions that they have made from time to time. The distributing depôts are made known at the out-patients' department of the Children's Infirmary, so as to bring the two institutions into closer contact with each other and to be a source of mutual assistance.

When the mother or the person in charge brings the infant with her, it is weighed.

If the child is not brought on the first visit, the milk is supplied on condition the mother brings it to be weighed at the earliest opportunity. The mother or guardian is told how to feed the child,

and the card of instructions is explained to her. Every effort is made to induce the mothers to bring their children to be weighed at least once a fortnight. It is difficult, however, for some to do so, owing to the distance at which they live from the dépôt, and some are indifferent. A considerable number, however, take a keen interest in their children's progress, and bring them more or less regularly to be weighed.

Trouble is occasionally experienced with the very ignorant class, who will persist in decanting the milk out of the sterilized bottle into one with a long tube. For the purpose, therefore, of seeing that the milk is properly used, the female inspectors visit from time to time the houses where it is likely that the milk is misused. Also in cases where the mother says the child does not like the milk, or does not appear to be thriving on it, a visit is paid, and if a doctor is not in attendance the mother is advised to call one in.

It will be readily understood that under these circumstances it is a difficult matter to compile statistics that will give a correct idea of the value of the results obtained. Dr. Mussen has carefully followed up a number of the infants using the milk, for a period of three months and upwards. The total number of children included in his observations is 360. No attempt has been made to select the cases, which were taken consecutively, and all have been included whose progress, whether good or bad for that time, could be ascertained. It may, therefore, be considered a fair indication of the general progress. When one considers that the average weights of the infants when admitted were far below the average of healthy infants of the same age, and also that a considerable percentage of them were seriously ill when admitted, the results are very satisfactory, showing as they do in the large proportion of cases an approximation to the normal standard.

Now let us consider the whole of the figures for what they are worth.

Without attempting to draw too close deductions, the fact stands out that out of the 4,453 infants coming very promiscuously to the dépôts, at varied ages and in conditions of health below the average,

the mortality was 78* per 1,000, as against 159 per 1,000 for the whole City, and 88 to 118 for the best districts, and 212 to 215 for the worst.

But it must be remembered that in that 159 per 1,000 for the whole City, and 88 to 118 for the best districts and 212 to 215 for the worst districts, are included also breast-fed infants; clearly if breast-fed infants were excluded and artificially-fed infants only taken into account, the rate of mortality amongst them would be enormously higher, and would show even more forcibly the advantages of the sterilized food, which, of course, is an artificial food, over other methods of artificial feeding.

The figures are very valuable, and are clearly and strongly in favour of persevering with the supply of this milk. But the figures are by no means the only evidences of the value of the milk; there is the evidence of parents, of medical men, and of personal observation, all strongly pointing to instances repeated over and over again in which to the use of the milk has been attributed the saving of the child's life. The question appears to narrow itself down to: What would these infants be fed on if they did not get this milk?

There are certain descriptive or statistical details, but as these can be best shown in tabular form, they are inserted in the appendix.

E. W. HOPE,

Medical Officer of Health.

* The death rate is based upon the number of infants supplied direct from the Corporation Depots only, as some difficulty was experienced in ascertaining the correct number of deaths amongst those supplied by the dairies, but there is no reason to suppose that this rate was exceeded amongst those obtaining milk from the dairies.

APPENDIX.

Number of infants fed on the milk since operations were started to December 31st, 1903	6,295
Approximate average age	3½ months
Number under 12 months	5,928
„ over „ „	367
Number of children who have died, having had Sterilized Milk.....	350
Of these there were:—	
Ill when admitted	228
Irregular customers	18
Had less than one week's supply	49
Total number of infants admitted healthy and properly fed.	55

The infants fed on Sterilized Milk were supplied from the following:—

Netherfield Road Depot.....	1,519
Earle „ „	674
Park „ „	777
Cazneau Street „	1,483

Total supplied from depôts.....	4,453
Supplied by Dairies	1,842

REGULATIONS.

The following are the regulations which control the sale of the milk:—

1. The milk is supplied in nine bottles in a basket, each bottle containing sufficient milk for one feed, according to the age of the child.

2. When all the milk in one bottle is not used, the remainder must not be warmed up again for the infant, but a fresh bottle opened for its next meal. The milk will be found to be quite sufficient if given regularly.

3. The person using the milk must guarantee to continue its use regularly during the needs of the child, and to send for it at the stated hours.

4. Should the milk not be agreeing with the child, the matter should be reported at once.

5. Every person using the milk will be supplied with two teats, which must be kept clean and brought to the *Depôt* for inspection, at least once a week. Extra teats will be charged for at the rate of 3d. each.

6. Just before using, each bottle should be placed unopened in a jug or basin of hot water, and warmed to the proper temperature. The bottle should then be opened and the teat inserted. It is recommended that at first, the infant should be fed every two hours during the day, and every four hours during the night.

7. After using, the bottle should be thoroughly rinsed in cold water.

8. If children are sent for the milk, they must be warned not to tamper with the stoppers of the bottles.

9. All bottles, stoppers, baskets, and rubber rings not returned to the Dépôt, will be charged full value.

10. The cost of the full weekly supply is 1s. 6d., payable in advance.

NOTE.—The Dépôts are open daily (Sundays and Bank Holidays excepted) from 11 a.m. till 6 p.m.

Sundays and Bank Holidays, 11 a.m. to 1 p.m.

Depôts for the sale of the milk are situated at:—

No. 251, Netherfield Road North.

No. 47, Cazneau Street.

No. 52, Earle Road.

No. 37b, Park Road.

and the milk is also supplied on special terms to a number of Dairies in various parts of the City.

Formula used for Modification of Milk.

Age.	Quantity of Pure Milk for Twenty-four Hours.	Water.
	Ounces.	Ounces.
One to two weeks	6 $\frac{3}{4}$	6 $\frac{3}{4}$
Two to eight weeks.....	13 $\frac{1}{2}$	13 $\frac{1}{2}$
Two to three months	20 $\frac{3}{4}$	10 $\frac{1}{2}$
Three to five months.....	30	15
Five to seven months	36	12
Over seven months.....	36	12

2 $\frac{1}{2}$ ounces of cream, 1 $\frac{1}{2}$ ounces of sugar, and $\frac{1}{4}$ ounce of salt, to be added to each gallon of mixture.

Staff employed at the various Depots.

The management of the depots is under the supervision of a Lady Superintendent, who was for some years on the Sanitary Staff.

Netherfield Road.

Staff—7 females, 2 boys.

Hours—7-30 a.m. to 5-30 p.m.

Sundays and Bank Holidays—

7-30 a.m. to 1 p.m.

Apparatus consists of:—

Two Sterilizers— Jackson's, 440 bottles at one operation.

—“ Wyvern,” 405 ,, ,,

The sterilizers can be raised to a temperature of 210°, and are kept at this temperature between 20 minutes and half-an-hour.

Six operations are performed daily, giving an available total of 5,070 bottles.

Earle Road.

Staff—5 females, 2 boys,
and 1 man (Engineer).

Hours—8 a.m. to 6 p.m.

Sundays and Bank Holidays—

8 a.m. to 1 p.m.

One sterilizer—Lister's, 960 bottles at one operation.

The temperature can be raised to 210°, and is kept at this temperature between 20 minutes and half-an-hour.

Six operations are performed daily, giving an available total of 5,760 bottles.

The Salaries are as follows, viz.:—

Females	from 15/- to 30/- per week.
Boys	„ 8/- to 10/6 „
Engineer	35/- „

Expenditure and Income for Years 1900 to 1903.

	1900.	1901.	1902.	1903.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Wages and Clothing.....	...	277 11 9	856 4 3	1,093 9 9
Rents	10 3 6	69 2 0	141 18 1	128 4 1
Rates and Taxes .....	)	20 13 4	46 15 6	65 9 0
Water Rent				
Gas ....	...	39 10 4	100 17 7	79 16 6
Coal .....	...	3 12 0	18 6 10	30 8 7
Printing and Stationery .....	...	1 19 0	6 2 4	19 11 1
Disbursements .....	...	7 3 6	12 18 9	12 13 6
Cleaning Premises, Windows, &c. ....	...	3 10 0	10 10 0	29 0 10
Travelling and Inspection Expenses.....	1 2 2	1 14 0	...	27 12 4
Stores (Milk, &c.) .....	...	303 19 10	1,427 2 10	1,604 12 1
Telephone Rent.....	...	3 8 0	6 16 0	13 16 10
Furniture and Fittings .....	...	333 8 3	84 16 5	9 9 11
Machinery	114 4 3	101 13 10	673 14 1	120 0 10
Bottles, Stoppers, &c. ....	...	425 19 0	459 16 8	645 9 0
Building Repairs, Alterations, &c.....	...	275 12 0	278 8 5	74 0 10
Horsing Vans, and Hire of Float .....	...	5 12 0	179 16 0	267 13 3
Electric Light Installation...	...	...	27 16 7	10 5 9
Insurance .....	...	...	2 18 7	2 9 3
Medical Attendance—Scalding Case.....	...	...	...	25 0 0
	125 9 11	1,874 8 10	4,334 18 11	4,259 3 5
Sale of Milk .....	...	518 0 2	1,534 13 7	2,230 11 1

Observations by Professor P. Budin.

It may be well to refer to an interesting report recently presented to the French Academy of Medicine by Professor P. Budin, showing the result of observations upon a number of specially fed infants.

The observations extended over a period of two years, and dealt with 712 infants treated at the Clinique Tarnier, all of whom were born in the hospital.

As a result of carefully supplementing the mother's milk in cases of insufficiency, or giving sterilized humanised milk solely when the mother was absolutely unable to nurse the child, the mortality was reduced to 36·5 per thousand, as against 178 per thousand below twelve months of age in Paris generally.

In the cases dealt with at this Clinique Tarnier the infants were under constant medical supervision. They were periodically weighed, and were most closely and most carefully watched.

Particular attention was drawn to the fact that the mother's milk and the sterilized humanised cows' milk do not clash in any way, nor give rise to digestion trouble.

The almost universal practice in this country of consuming raw milk is not adopted on the Continent, but the milk is usually boiled.

The following is the form adopted in making inquiries in cases in which infants using the milk have died:—

Sterilized Milk Enquiries.

- 1.—Date of Death
- 2.—Name
- Address
- 3.—Age
- 4.—Cause of Death
- 5.—Previous feeding and health
- 6.—Date or age at which Sterilized Milk was first given, and where obtained :
.....
.....
- 7.—Length of time on Milk
- 8.—Was it given regularly, or with any addition?
- 9.—Did Milk suit the Child. If not, in what way did it disagree?
.....
- 10.—When was it discontinued?
- 11.—Duration of fatal illness
- 12.—Any complaints as to Milk
- 13.—Condition of House, &c.

REMARKS:—

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**Analyst's Report on Samples of Infants' Patent Foods
now on the Market.**

- No. 504 N. (Neave's)—Consists chiefly of wheat flour, baked, and partly rendered soluble.
- No. 509 N. (Dr. Gordon's)—Is made from wheat flour, partly baked, and very imperfectly soluble.
- No. 1,827 C. (Benger's)—Is made from wheat flour, digested by pancreatic extract, when the instructions on packages are carried out.
- No. 1,828 (Mellin's)—Is made from wheat, and rendered entirely soluble.
- No. 1,829 (Allenbury's)—Is made from wheat flour slightly baked, and rendered slightly soluble by malt, when the instructions on the package are carried out.
- No. 1,830 (Dr. Ridge's)—Is flour very slightly baked, and not rendered soluble.
- No. 1,831 (Angell's)—Is wheat flour with milk, rendered partly soluble.
- No. 1,832 (Savory & Moore)—Is made from flour rendered partly soluble.
- No. 1,833 C. (Hovis)—Is wheat flour rendered entirely soluble.
- No. 1,254 S. (Barco)—Is simply barley flour not altered.
- No. 1,266 (Frame)—Is cooked flour.
- No. 1,267 S. (Nestle's Milk Food)—Is cooked flour with milk, and rendered half soluble.
- No. 1,835 C. (Burnett's)—Is unbaked wheat flour.
- No. 1,837 C. (Dr. Allinson's)—Is wheat flour very slightly baked.
- No. 533 N. (Robinson's)—Is barley, with a little wheat, and not cooked.

- No. 517 N. (Digestive Food)—Is wheat flour very slightly baked.
- No. 534 N. (Nichol's)—Is a mixture of wheat flour and bran; not cooked.
- No. 1,291 S. (Dr. Jenner's)—Is wheat flour, slightly cooked only, with a little malt.
- No. 1,865 C. (Carnick's)—Is flour rendered half soluble with a little skim milk.

